



TITLE:

# The Papers Published by the Staff Member of the Institute from July 1990 to June 1991

AUTHOR(S):

---

CITATION:

The Papers Published by the Staff Member of the Institute from July 1990 to June 1991.  
Bulletin of the Institute for Chemical Research, Kyoto University 1992, 69(5-6): 587-616

ISSUE DATE:

1992-02-15

URL:

<http://hdl.handle.net/2433/77416>

RIGHT:

## The Papers Published by the Staff Member of the Institute from July 1990 to June 1991

### Nuclear Chemistry

DV- $X\alpha$  Calculation on XPS for  $SF_6$  Valence Levels, H. Nakamatsu, T. Mukoyama and H. Adachi, *J. Electron Spectrosc. Relat. Phenom.*, **53**, 265, (1991).

DV- $X\alpha$  Calculation on Energy Levels for  $SF_6$ , H. Nakamatsu, H. Adachi and T. Mukoyama, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 304, (1991).

DV- $X\alpha$  Calculation on X-ray Absorption Spectra for  $SF_6$ , H. Nakamatsu, T. Mukoyama and H. Adachi, "Int. Conf. X-ray Inner-Shell Processes", C07, (1990).

Paraelectric-antiferroelectric Phase Transition in Titanite,  $CaTiSiO_5$ . I. A High Temperature X-ray Diffraction Study of the Order Parameter and Transition Mechanism, S. Ghose, Y. Ito and D. Hatch, *Phys. Chem. Minerals*, **17**, 591–603, (1991).

Evaluation of Position Sensitive Detectors (Position Sensitive Proportional Counter and Photo-Diode Array) for X-ray Spectral Measurement, Y. Ito, K. Omote, T. Shoji, I. Kaneda, Y. Nakanishi and H. Kaneko, *Bunko Kenkyu*, **40**, 15–20, (1991), in Japanese.

The Disordered Fluorine Ions at 131K in  $\beta$ - $PbF_2$  Quenched from 970K, Y. Ito, K. Koto, S. Yoshikado, T. Ohachi, F. Kanamaru and T. Mukoyama, "Proceedings of the Symposium on High Temperature Materials Chemistry-V", 90–18, 223–229, (1990).

Paraelectric to Antiferroelectric Phase Transition in Titanite: Order Parameter and Transition Mechanism, S. Ghose, Y. Ito and D. Hatch, "Fifteenth Congress of the International Union of Crystallography", C-343, 18, (1990).

$K\beta/K\alpha$  X-Ray Intensity Ratios by Photoionization and Electron Capture Decay, K. Taniguchi, T. Mukoyama and H. Adachi, "Fifteenth International Conference on X-Ray and Inner-Shell Processes, July 9–13, 1990, Knoxville, Tennessee, Book of Abstracts", E09, (1990).

Relativistic Finite-Basis-Set Expansion Method for K-Shell Ionization Cross Sections in Ion-Atom Collisions, T. Mukoyama and C.-D. Lin, "Fifteenth International Conference on X-Ray and Inner-Shell Processes, July 9–13, Knoxville, Tennessee, Book of Abstracts", F09, (1990).

DV- $X\alpha$  Calculation of X-Ray Absorption Spectra of Resonances for  $SF_6$ , H. Nakamatsu, T. Mukoyama and H. Adachi, "Twelfth International Conference on Atomic Physics, July 29–August 3, 1990, University of Michigan, Ann Arbor, Abstracts of Contributed Papers", IX-1, (1990).

Atomic Collisions by High-Energy Light Ions: Ionization Processes, T. Mukoyama, "Workshop on TARN II, March 23–24, 1990. Institute for Nuclear Study, University of Tokyo", 12, (1990), In Japanese.

Measurement of the Mass of the Electron Neutrino using Electron Capture in  $^{163}\text{Ho}$ , S. Yasumi, H. Maezawa, S. Kishimoto, M. Fujioka, K. Sera, T. Omori, K. Shima, T. Mukoyama, Y. Inagaki and G. Izawa, *Nucl. Phys. B (Proc. Suppl.)*, **16**, 499, (1990).

Consideration about Current Models on Ionic Charge States in Solid, K. Shima and T. Mukoyama, "International RIKEN Symposium on High-Energy Ion-Atom Collisions, 22–24 March, 1990, RIKEN, Wako", 68, [1990].

L-Shell Ionization by Antiprotons, L. Sarkadi and T. Mukoyama, *Phys. Rev. A*, **42**, 3878, (1990).

$L_3$ -Shell Alignment of Argon Following Charge-Changing Collisions with Protons, L. Sarkadi, T. Vajnai, J. Pálkás, Á. Köver, J. Végh and T. Mukoyama, *J. Phys. B: At. Mol. Opt. Phys.*, **23**, 3643, (1990).

Dynamic Subshell Coupling Effects in L-Shell Ionization of Thorium by Heavy Ions, L. Sarkadi and T. Mukoyama, *J. Phys. B: At. Mol. Opt. Phys.*, **23**, 3849, (1990).

K-Shell Ionization of Atoms by Mesons, T. Mukoyama, H. Kaji and K. Yoshihara, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 177, (1990).

Inner-Shell Ionization by Light-Ion Impact, T. Mukoyama, *International Journal of PIXE*, **1**, 29, (1991).

Energy and Intensity of Dy M X Rays, T. Mukoyama, "Proceedings of the 15th Workshop on the Mass of the Electron Neutrino, Jan. 10, 1991, KEK", KEK Report 90–22, 6, (1991), in Japanese.

Wave Function Effect on the Ionization Probability in the Geometrical Model, T. Mukoyama, S. Ito, B. Sulik and G. Hock, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 281, (1991).

Rearrangement of Electronic States of Heavy Ions Passing Through Solid Targets, T. Mukoyama and K. Shima, "High-Energy Ion-atom Collisions, Edited by D. Berenyi and G. Hock, (Lecture Notes in Physics 376). Berlin, Springer, 1991", 341, (1991).

On Shell Effects of Ionic Charge States in Solids, K. Shima, T. Mukoyama, T. Mizogawa, Y. Kanai, T. Kambara and Y. Awaya, *Nucl. Instrum. Methods Phys. Res.*, **B53**, 404, (1991).

Relativistic Effect on the Ionization Probability in the Geometrical Model, T. Mukoyama, S. Ito, B. Sulik and G. Hock, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 15, (1991).

Monte Carlo Simulations of Charge States of Heavy Ions After Passing Through Solids, T. Mukoyama and K. Shima, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 29, (1991).

Proportional Counter Designed for Resonance-electron Mössbauer Spectroscopy, T. Fujii, R. Katano, S. Ito and Y. Isozumi, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 110, (1990).

Magnetic Properties of Corrosion Products Investigated by CEMS at Low Temperatures near 4.2K, T. Kobayashi, K. Fukumura, Y. Isozumi and R. Katano, *Hyp. Int.*, **57**, 1923, (1990).

Conversion Electron Mössbauer Spectroscopy of a Single Crystalline  $\text{Bi}_3\text{Fe}_5\text{O}_{12}$  Film, T. Fujii, M. Takano, Y. Bando, Y. Isozumi and T. Okuda, *J. Magn. Magn. Mater.*, **92**, 261, (1990).

Depth Selective Mössbauer Spectroscopic Study of  $\text{Fe}_3\text{O}_4$  Epitaxial Films, T. Fujii, M. Takano, R. Katano, Y. Bando and Y. Isozumi, *J. Appl. Phys.*, **68**, 1735, (1990).

Stability in Operation of a Gas-filled Porportional Counter at Liquid-nitrogen Temperature, K. Fukumura, R. Katano, T. Kobayashi, A. Nakanishi and Y. Isozumi, *Nucl. Instrum. Methods*, **A301**, 482, (1991).

Operation of a Gas-filled Proportional Counter for CEMS at Temperatures between 15-17K, K. Fukumura, A. Nakanishi, T. Kobayashi, R. Katano and Y. Isozumi, *Nucl. Instrum. Methods*, **B61**, 127, (1991).

Superconductive Radiation Detector with Large Sensitive Area (Series Connected STJ Detector), M. Kurakado, A. Matsumura, T. Takahashi, S. Ito, R. Katano and Y. Isozumi, *Rev. Sci. Instrum.*, **62**, 156, (1991).

Resolution of Read-out Patterns for Positive-sensitive Proportional Counter, N. Maeda, Y. Isozumi, R. Katano, S. Ito and Y. Awaya, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 35, (1991).

Position-sensitive Proportional Counter for High-energy X Rays, S. Ito, M. Tosaki, R. Katano, Y. Isozumi and Y. Awaya, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 43, (1991).

Resonance-electron Mössbauer Spectroscopy at Low Temperatures, Y. Isozumi, *Kotai Butsuri*, **26**, 663, (1991), in Japanese.

7MeV-Proton LINAC at ICR, Y. Iwashita, M. Inoue, H. Ego, H. Okamoto, S. Kakigi, T. Shirai, K. Fukunaga, K. Jujita and H. Takekoshi, "Proceedings of the 2nd International Symposium on ADVANCED NUCLEAR ENERGY RESEARCH Evolution by Accelerators, January 24-26, 1990 at Mito Plaza Hotel, Mito, Ibaraki, Japan", 345, (1990).

Present Status of Cooler Synchrotron TARN II, T. Katayama, S. Andou, K. Chida, T. Hattori, T. Honnma, M. Kanazawa, A. Mizobuchi, H. Mutou, N. Nakai, S. Ninomiya, A. Noda, K. Noda, M. Sekiguchi, F. Soga, T. Tanabe, N. Ueda, S. Watanabe, T. Watanabe and M. Yoshizawa, "Proceedings of 2nd European Particle Accelerator Conference, Nice, June 12-16, 1990", **1**, 577, (1990).

Slow Beam Extraction System of TARN II, A. Node, K. Chida, M. Yoshizawa, F. Soga, A. Mizobuchi and Y. Hattori, "Proceedings of 2nd European Particle Accelerator

Conference at Nice, June 12–16, 1990”, **1**, 1263, (1990).

Electron Cooling Experiments at TARN II, T. Tanabe, A. Ando, K. Chida, T. Honma, T. Hattori, M. Kanazawa, T. Katayama, A. Mizobuchi, M. Nakai, A. Noda, K. Noda, M. Sekiguchi, F. Soga, N. Ueda, S. Watanabe, T. Watanabe and M. Yoshizawa, “Proceedings of 2nd European Particle Accelerator Conference at Nice, June 12–16, 1990”, **1**, 1571, (1990).

Slow Beam Extraction of the Japanese Hadron Project, A. Noda, C. Ohmori, Y. Kamiya and M. Kihara, “Proceedings of 2nd European Particle Accelerator Conference, Nice, June 12–16, 1990”, **1**, 1592, (1990).

Status of the 7 MeV Proton Linear Accelerator, Y. Iwashita, “Proceedings of “Workshop on the Accelerator for Particle therapy” August 22–23, 1990. at Research Reactor Institute, Kyoto Univ.”, **33**, (1990), in Japanese.

Dominance of the Direct Reaction Process in the  $^{12}\text{C}(^7\text{Li}, ^7\text{Be})^{12}\text{B}$  Reaction at  $\theta_L = 0^\circ$  and  $E_L > 21$  MeV/A, S. Nakayama, T. Yamagata, K. Yuasa, M. Tanaka, M. Inoue, T. Itahashi and H. Ogata, *Phys. Lett. B*, **246**, 342, (1990).

Double-Scattering Corrections to the Quasifree Scattering in the  $^3\text{He}(p, pp)^2\text{H}$  Reaction, S. Kakigi, K. Fukunaga, A. Okihana and T. Sekioka, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 103, (1990).

Design Study of a Heavy Ion RFQ Linac, H. Fujisawa, Y. Iwashita and H. Takekoshi, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 121, (1990).

System of 7MeV-Proton Linac, Y. Iwashita, M. Inoue, H. Ego, H. Okamoto, S. Kakigi, S. Sawamura, T. Shirai, H. Fujita, K. Fukunaga and H. Takekoshi, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 156, (1990).

Analyzing Power for the  $^3\text{He}(d, dp)^2\text{H}$  Reaction at 59.6 MeV, T. Sekioka, K. Fukunaga, S. Kakigi, T. Ohsawa, T. Hayashi and A. Okihana, *RCNP Annual Report, 1989*, 47, (1990).

Coupled Motion in Alternating Phase Focused Linacs, H. Okamoto, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 1, (1991).

The RF Power Amplifier System for a Heavy Ion RFQ Linac, H. Fujisawa, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 11, (1991).

Accelerators for Proton Therapy, M. Inoue, Y. Iwashita and A. Noda, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 50, (1991).

Design Study of a Heavy Ion RF Linac for MeV Implanter, H. Fujisawa, Y. Iwashita, M. Inoue and H. Takekoshi, “Proceedings of the 1990 Linear Accelerator Conference, September 10–14, 1990, at Albuquerque, New Mexico”, 241, (1991).

7MeV-Proton Linac, Y. Iwashita, M. Inoue, H. Ego, H. Okamoto, S. Kakigi, M. Sawamura, T. Shirai, H. Fujita, K. Fukunaga and H. Takekoshi, “Proceedings of the 1990

Linear Accelerator Conference, September 10–14, 1990, Albuquerque, New Mexico”, 746, (1991).

A Use of a Thin Foil Target in a Cooler Ring Experiment, K. Noda, A. Noda, I. Katayama and N. Sakamoto, *Nucl. Instrum. Methods Phys. Res.*, **A303**, 215, (1991).

Particle- $\gamma$  Coincidence Applied to Observation of Spin-Flip Probability in the ( $^7\text{Li}, ^7\text{Be}$ ) Reaction, S. Nakayama, T. Yamagata, M. Tanaka, M. Inoue, K. Yuasa, T. Itahashi, H. Ogata, N. Koori and K. Shima, *Nucl. Instrum. Methods Phys. Res.*, **A302**, 472, (1991).

Electron Cooling at TARN II, T. Tanabe, A. Ando, K. Chida, T. Hattori, T. Honma, M. Kanazawa, T. Katayama, A. Mizobuchi, H. Muto, M. Nakai, A. Noda, K. Noda, H. Poth, M. Sekiguchi, F. Soga, M. Tomizawa, N. Ueda, S. Watanabe, T. Watanabe, J. Yoshizawa and M. Yoshizawa, “Proceedings of the 19th INS Symposium Cooler Rings and Their Applications at Tokyo, Japan, November 5–8, 1990”, 69, (1991).

Advanced Stacking Methods Using Electron Cooling at the TSR Heidelberg, M. Grieser, M. Blum, D. Habs, R.V. Hahn, B. Hochadel, E. Jaeschke, C.M. Kleffner, M. Stampfer, M. Steck and A. Noda, “Proceedings of the 19th INS Symposium Cooler Rings and Their Applications, Tokyo, Japan, November 5–8, 1990”, 190, (1991).

A Thin Foil as an Internal Target for a Cooler Ring Experiment, K. Noda, A. Noda, I. Katayama and N. Sakamoto, “Proceedings of the 19th INS Symposium Cooler Rings and Their Applications”, 238, (1991).

Direct Detection of Galactic Axions with Rydberg Atoms in an Inhibited Cavity Regime, S. Matsuki and K. Yamamoto, *Phys. Lett. B*, **263**, 523, (1991).

Nuclear Polarization and Magnetic Resonance of Unstable  $^{170}\text{Tm}$  with Beta-Ray Radiation-Detected Optical Pumping in Solids, K. Shimomura, S. Uemura, T. Kohmoto, Y. Fukuda, S. Ito, K. Okano, T. Muramoto, T. Hashi and S. Matsuki, *Phys. Rev. C*, **42**, R487, (1990).

Collective Excitations of  $^{112}\text{Cd}$  and  $^{110}\text{Pd}$  in 20 MeV ( $\vec{d}$ ,  $d$ ) and 65 MeV ( $\vec{p}$ ,  $p$ ), R. Hertenberger, G. Graw, F.J. Eckle, H. Kader, P. Schiemenz, N. Blasi, S. Micheletti, R. De Leo, N. Fujiwara, K. Hosono, M. Kondo, M. Matsuoka, T. Noro, T. Saito, S. Kato, H. Okamoto, S. Matsuki and C. Hategan, “Abstracts of Contributed Papers of 7th International Conference on Polarization Phenomena in Nuclear Physics, 9–13 Juillet 1990, Paris”, 20B, (1990).

Nuclear Polarization of Recoil Implanted  $^{164}\text{Tm}$  with Radiation-Detected Optical Pumping in Solids, K. Shimomura, S. Hatori, T. Kohmoto, Y. Fukuda, T. Murayama, T. Inamura, S. Morinobu, M. Kondo and S. Matsuki, “Abstracts of Contributed Papers of 7th International Conference on Polarization Phenomena in Nuclear Physics, 9–13 Juillet 1990, Paris”, 12E, (1990).

Construction of an RF Ion-trap for Nuclear Laser Spectroscopy-Detection of the Laser-Induced Fluorescence from the Trapped Ions of  $^{88}\text{Sr}^+$  and  $^{87}\text{Sr}^+$ , M. Wada, H. Sunaoshi, Y. Fukushima, S. Hayashibe, T. Shinozuka, M. Fujioka, M. Yagi, I. Satoh and S. Matsuki,

"Proceedings of the 19th INS Symposium Cooler Rings and their Applications Tokyo, Japan, November 5-8, 1990", 132, (1991).

### Physical Chemistry

FT-IR Spectra and Molecular Orientation in Thin LB Films of Dodecyloxyphenylpyrazine Carboxylic Acid and its Barium Salt, T. Kamata J. Umemura, T. Takenaka, K. Takehara, K. Isomura and H. Taniguchi, *J. Mol. Struct.*, **240**, 187, (1990).

Thermal Stability of Metal Stearate LB Films, Studied by Infrared Reflection-Absorption Spectroscopy, T. Hasegawa, T. Kamata, J. Umemura and T. Takenaka, *Chem. Lett.*, 1543, (1990).

Visible Absorption Spectra of Cetyl Orange Monolayers on the Water Surface, J. Umemura, T. Kawai and T. Takenaka, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 241, (1990).

Structure of Butyldodecyldimethylammonium Bromide Monohydrate, T. Taga, Y. Miwa, K. Machida, N. Kimura, S. Hayashi, J. Umemura and T. Takenaka, *Acta Cryst.*, **C46**, 293, (1990).

Vibrational Dephasing in Computer Simulated  $\text{LiNO}_3$ , T. Kato, K. Machida, M. Oobatake and S. Hayashi, *J. Chem. Phys.*, **93**, 3970, (1990).

Molecular Dynamics Simulation of Structure of Liquid Methane, M. Oobatake, S. Hayashi and K. Machida, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 255 (1990).

Two-Dimensional Crystallization of Proteins and Their Structure with Transmission Electron Microscope, H. Yoshimura, S. Endo, K. Nagayama and M. Matsumoto, *Nippon Denshi News*, **30**, 58, (1990), in Japanese.

Surfactant Monolayers on a Clean Mercury Surface: Apparatus and Experiments, M. Matsumoto, H. Yoshimura, V.S. Kulkarni and K. Nagayama, *Colloid Polym. Sci.*, **268**, 1174, (1990).

Application of Infrared and Raman Spectroscopy to the Study of Surface Chemistry, T. Takenaka and J. Umemura, *Vibrational Spectra and Structure*, **19**, 215-314, (1991).

Infrared Reflection-Absorption Spectra of Untrathin Organic Films, T. Takenaka, *Hyomen Kagaku*, **12**, 375, (1991), in Japanese.

Relationship between Pyroelectricity and Molecular Orientation in Alternate LB Films, T. Kamata, J. Umemura, T. Takenaka and N. Koizumi, *J. Phys. Chem.*, **95**, 4092, (1991).

Characterization of Untrathin Organic Membranes by Vibrational Spectroscopy, T. Takenaka, J. Umemura, T. Kamata, T. Kawai and N. Koizumi, *Polym. J.*, **23**, 357, (1991).

Resonance Raman Study of Spread Monolayers of Cetyl Orange on Water and Thin LB Films, H. Matsuda, T. Kawai, J. Umemura and T. Takenaka, *J. Mol. Struct.*, **242**, 39, (1991).

Graphitization of Amorphous Carbon at High Pressure to 15 Gpa, A. Onodera, Y. Irie, K. Higashi, J. Umemura and T. Takenaka, *J. Appl. Phys.*, **69**, 2611, (1991).

Interpretation for the Anomaly of the C = O Stretching Band in Benzoic Acid Crystal, S. Hayashi, M. Oobatake, R. Nakamura and K. Machida, *J. Chem. Phys.*, **94**, 4446, (1991).

Polarized FT-IR Spectra of Water in Dodecylpropyldimethylammonium Bromide Hemihydrate, N. Kimura, *J. Phys. Chem.*, **95**, 3527, (1991).

Influence of Gas on the Properties of Monomolecular Films of Long-Chain Organic Compounds Spread at Gas-Mercury Interfaces, V.S. Kulkarni, M. Matsumoto, H. Yoshimura and K. Nagayama, *J. Colloid Interface Sci.*, **144**, 586, (1991).

Spread Monolayers on Mercury Surfaces, M. Matsumoto, H. Yoshimura, S. Endo and K. Nagayama, *Hyomen*, **30**, 313, (1991), in Japanese.

Defect Structures of Organic Thin Crystals Studied by Direct Imaging of Molecules with a High Resolution Electron Microscope, T. Kobayashi, N. Asaka, T. Maeda and N. Kawase, "Proc. Intern. Conf. on Sci. and Tech. of Defect Control in Semiconductors", **2**, 1623–1627, (1990).

Application of Imaging Plate to High-Voltage Electron Microscopy, S. Isoda, K. Saitoh, S. Moriguchi and T. Kobayashi, "Proc. 12th Intern. Cong. Electron Microscopy", **1**, 168–169, (1990).

High Resolution Electron Microscopy in Organic Chemistry: 1 MeV Electron Microscope in Kyoto, S. Moriguchi, H. Kurata, S. Isoda and T. Kobayashi, "Proc. 12th Intern. Cong. Electron Microscopy", **1**, 140–141, (1990).

Arrangement of Molecules at Lattice Defect in an Organic Crystal, T. Maeda, S. Isoda and T. Kobayashi, "Proc. 12th Intern. Cong. Electron Microscopy", **4**, 492–493, (1990).

ELNES of Iron Compounds, H. Kurata, K. Nagai, S. Isoda and T. Kobayashi, "Proc. 12th Intern. Cong. Electron Microscopy", **2**, 28–29, (1990).

HVEM in Organic Crystallography, S. Isoda, S. Moriguchi, H. Kurata and T. Kobayashi, "Proc. Intern. Symp. New Directions and Future Aspects of HVEM", 66–67, (1990).

Structure of Thin Organic Films Observed by Electron Microscopy, S. Isoda, A. Hoshino, H. Kurata and T. Kobayashi, "Proc. 39th Okazaki Conf.", 31, (1990).

Small-Angle X-Ray Scattering from the Surface of Polymer Crystals, T. Ogawa, *J. Phys. Soc. Jpn.*, **59**, 3642–3649, (1990).

Epitaxial Growth of Organic Thin Films and Characterization of their Defect Structures by High-Resolution Electron Microscopy, T. Kobayashi, "Crystals: Growth, Properties, and Applications", Springer-Verlag, **13**, 2–63, (1991).

Iron L<sub>2,3</sub> White Line Ratio in nm-sized  $\gamma$ -Iron Crystallites Embedded in MgO,



H. Kurata and N. Tanaka, *Microsc. Microanal. Microstruct.*, **2**, 183–190, (1991).

Resolution Power and Sensitivity of Imaging Plate, K. Saitoh, S. Moriguchi, S. Isoda and T. Kobayashi, "Proc. 35th Symp. Electron Microscopy", 54–56, (1990), in Japanese.

Molecular Imaging of Epitaxially Grown Organic Double Layer Interface, S. Isoda, I. Kubo, A. Hoshino, N. Asaka, H. Kurata and T. Kobayashi, "Proc. 7th Intern. Conf. Vapor Growth and Epitaxy", 197, (1991).

Consideration on the Epitaxial Growth Process of the Crystalline Films of Poly GeO- and Poly SiO-Phthalocyanines on Alkali Halide Substrates, N. Asaka, S. Isoda and T. Kobayashi, "Proc. 7th Intern. Conf. Vapor Growth and Epitaxy", 162, (1991).

Epitaxial Growth of Organic Crystals on Organic Substrates, A. Hoshino, S. Isoda and T. Kobayashi, "Proc. 7th Intern. Conf. Vapor Growth and Epitaxy", 222, (1991).

Sensitivity and Resolution Power of Imaging Plate, S. Isoda, *Denshi Kenbikyo*, **26**, 82–85, (1991), in Japanese.

Utility Test of Imaging Plate as a High-resolution Image-recording Material for Radiation-sensitive Specimens, S. Isoda, K. Saitoh, S. Moriguchi and T. Kobayashi, *Ultra-microscopy*, **35**, 329–338, (1991).

Determination of Capacitances and Conductances of the Constituent Phases from Dielectric Observations on Terlamellar Composite Systems, K. Kiyohara, K.S. Zhao, K. Asami and T. Hanai, *Jpn. J. Appl. Phys.*, **29**[9], 1751, (1990).

What Kind of Information can be Obtained from Dielectric Observation? —Some Features from Dielectric Point of View—, T. Hanai, *Hyomen*, **29**[1], 18, (1991), in Japanese.

Various Kinds of Dielectric Behavior as Viewed in Colloidal Systems —Significance and the Practice of Dielectric Relaxation due to Charge Storage at Interphases—, T. Hanai, *J. Surf. Sci. Soc. Jpn.*, **12**[1], 14, (1991).

Data Tables of Permittivity (Chap. 13 Sec. 3), T. Hanai, *Kagaku Binran*, II, 501–506, (1991), in Japanese.

Dielectric Properties of Epithelial Monolayer Cultured on Planar Permeable Support, K. Asami, A. Irimajiri and T. Hanai, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**[4], 219–223, (1990).

Dielectric Phenomena and Measurements, T. Hanai and K. Asami, Jikken Kagaku-Koza, "Electricity and Magnetism", **9**, 215–243, (1991), in Japanese.

Main-Chain Motions of a Liquid Crystalline Cellulose Derivative as Revealed by Dielectric Measurements, Y. Kita, T. Hanai, T. Sato, Y. Tsujii and T. Miyamoto, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**[4], 265, (1990).

Dielectric Relaxation of Liquid Crystalline Cyanotethylated O-(2,3-Dihydroxypropyl)-cellulose, T. Sato, Y. Tsujii, Y. Kita, T. Fukuda and T. Miyamoto, *Macromolecules*,

24[16], 4691, (1991).

Theoretical Study of Dielectric Behavior of Microcapsule Suspensions with Distributed Drug Release Rate, K. Sekine and T. Hanai, *Colloid Polym. Sci.*, **268**, 1059, (1990).

Electrochemical Properties of Asymmetric Cellulose Acetate Membranes, K. Asaka, *J. Membrane Sci.*, **52**, 57–76, (1990).

Low Frequency Dielectric Relaxations of Cellulose Acetate Membranes in Aqueous Electrolyte Solutions, K. Asaka and T. Hanai, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**[4], 224, (1990).

Ionic Conductivity and Dielectric Relaxation of  $\beta$ -Al<sub>2</sub>O<sub>3</sub> Fiber Superionic Conductor, K. Iwauchi and T. Maki, *Phys. Stat. Sol. (a)*, **122**, 503, (1990).

Magnetic Properties of Ba<sub>1-x</sub>Sr<sub>x</sub>Ti<sub>2-y</sub>Sn<sub>y</sub>Fe<sub>4</sub>O<sub>11</sub>, K. Iwauchi and Y. Ikeda, *J. Magn. Magn. Mater.*, **96**, 261, (1991).

### Analytical and Inorganic Chemistry

<sup>1</sup>H- and <sup>13</sup>C-NMR Studies on 4-Acyl-5-Pyrazolone Derivatives and their Divalent Metal Chelates, T. Matsumura, T. Nakamura, S. Umetani and M. Matsui, *Bunseki Kagaku*, **39**, 559, (1990), in Japanese.

Selectivity of the Ion Selective Electrode Based on the Voltammetry at the Liquid/Liquid Interface, S. Kihara, M. Suzuki, K. Ogura, O. Shirai and M. Matsui, *Bunseki Kagaku*, **39**, 661, (1990), in Japanese.

Stripping Coulometry of Trace Amount of Uranium with Twin Column Electrodes of Glassy Carbon Fibers, Z. Yoshida, H. Aoyagi and S. Kihara, "Proceedings of International Trace Analysis Symposium '90", 439, (1990).

Effect of Temperature on Ion Transfer at the Aqueous/Organic Solution Interface Studied by Current-Scan Polarography with the Electrolyte Solution Dropping Electrode, M. Suzuki, S. Kihara, K. Maeda, K. Ogura and M. Matsui, *J. Electroanal. Chem.*, **292**, 231, (1990).

Steric Effect of Ortho-Substituents of 1-Phenyl-3-Methyl-4-Aroyl-5-Pyrazolones on the Synergic Extraction of Lutetium with Trioctylphosphine Oxide, H. Mukai, S. Miyazaki, S. Umetani, S. Kihara and M. Matsui, *Anal. Chim. Acta*, **239**, 277, (1990).

Voltammetric Study on the Oscillation of the Potential Difference at a Liquid/Liquid or Liquid/Membrane Interface Accompanied by Ion Transfer, K. Maeda, S. Kihara, M. Suzuki and M. Matsui, *J. Electroanal. Chem.*, **295**, 183, (1990).

Tentative Reaction Network for Bromate-Bromide-Ferrioxin System and Simulation of Behavior of the System under Batch Reactor and Continuous-Flow Stirred Tank Reactor Conditions, Y. Sasaki, *Bull. Chem. Soc. Jpn.*, **63**, 3521, (1990).

Abiotic Photosynthesis of Substances Relative to the Origin of Life from Aqueous

Ammonium Carbonate Solutions, S. Kihara, M. Sanada, S. Kuwada, Y. Sohrin, O. Shirai, M. Suzuki and M. Matsui, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 213, (1990).

Electrode Processes of Plutonium Ions in Phosphate Media, Z. Yoshida, H. Aoyagi and S. Kihara, *Fresenius J. Anal. Chem.*, **340**, 403, (1991).

Redox, Disproportionation, and Complex Formation Reactions of Neptunium Ions, Z. Yoshida, H. Aoyagi, Y. Kato, Y. Li and S. Kihara, "Proceedings of the Third International Symposium on Advanced Nuclear Energy Research", 268, (1991).

Nonaqueous Extraction of Zinc from Diethylene Glycol Solution of Chloride by TOPO in Decaline, Y. Nakai, T. Aoki, H. Mukai, S. Kihara and M. Matsui, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 295 (1991).

Liquid-Liquid Extraction of Organometallic and Inorganic Germanium as the Chloride Complex, Y. Sohrin, *Anal. Chem.*, **63**, 811, (1991).

Properties of Solvent and Solute-Solvent Interactions, S. Kihara, *Bunseki*, 260, (1991), in Japanese.

Voltammetric Interpretation of Ion Transfer Coupled with Electron Transfer at a Liquid/Liquid Interface, K. Maeda, S. Kihara, M. Suzuki and M. Matsui, *J. Electroanal. Chem.*, **303**, 171, (1991).

Stereoselective Adduct Formation of  $\alpha$ -Acylcamphorato-Copper(II) Chelates with Some Chiral Lewis Bases, S. Tsurubou, T. Sakai, S. Kihara and M. Matsui, *Anal. Chim. Acta* **244**, 289, (1991).

Precipitation and Extraction of some Bivalent Metal Ions with Bis(Diphenylphosphinyl)-Methane and Perchlorate, S. Umetani, N. Shigemura, S. Kihara and M. Matsui, *Talanta*, **38**, 653, (1991).

Analytical Chemical Study on Actionoids Ions by Column Electrolysis, S. Kihara, Z. Yoshida and H. Aoyagi, *Bunseki Kagaku*, **40**, 309, (1991), in Japanese.

Stability of Sol-Gel Derived Porous Silica Monolith to Solvents, S. Sakka and T. Adachi, *J. Mater. Sci.*, **25**, 3408, (1990).

Dependence of the Elastic Moduli of Porous Silica Gel Prepared by the Sol-Gel Method on Heat-Treatment, T. Adachi and S. Sakka, *J. Mater. Sci.*, **25**, 4732, (1990).

Ammonolysis of Silica Gels Containing Methyl Groups, H. Unuma, M. Yamamoto, Y. Suzuki and S. Sakka, *J. Non-Cryst. Solids*, **128**, 223, (1991).

Synthesis of Hydroxyapatite from Metal Alkoxides through Sol-Gel Technique, Y. Masuda, K. Matsubara and S. Sakka, *Nippon Seramikkusu Kyokai Gakujutsu Ronbunshi*, **98**[11], 1225, (1990), in Japanese.

Formation of  $\text{CH}_3\text{Si}_8\text{O}_{19}$  7-Cubic Octameric Anion in (2-Hydroxyethyl) Trimethylammonium Silicate Aqueous Solutions Containing Hydrolysis Products of Methyltriethoxysilane, I. Hasegawa and S. Sakka, *Bull. Chem. Soc. Jpn.*, **63**, 3203, (1990).

Structures of Gallate, Aluminate and Titanate Glasses, S. Sakka, H. Kozuka, K. Fukumi and F. Miyaji, *J. Non-Cryst. Solids*, **123**, 176, (1990).

Preparation of Superconducting Bi-Sr-Ca-Cu-O Ceramics by the Sol-Gel Method, H.R. Zhuang, H. Kozuka and S. Sakka, *J. Mater. Sci.*, **25**, 4762, (1990).

Preparation of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  Superconductor by Sol-Gel Method Using Mital Carboxylates as Starting Materials, J.S. Jin, H. Kozuka and S. Sakka, *Zairyo*, **40**, 374, (1991), in Japanese.

Structure of  $\text{Na}_2\text{O} \cdot 2\text{TiO}_2$  Glass, F. Miyaji, T. Yoko, H. Kozuka and S. Sakka, *J. Mater. Sci.*, **26**, 248, (1991).

Preparation of Lithium Aluminosilicate Glass-Ceramic Monolith from Metal Alkoxide Solution. Part 2 Conversion of Gel to Glass-Ceramic Monoliths and Their Properties, J.-S. Yang, S. Sakka, T. Yoko and H. Kozuka, *J. Mater. Sci.*, **26**, 1827, (1991).

Copper $\rightleftharpoons$ Alkali Ion Exchange of Alkali Aluminosilicate Glasses in Copper-Containing Molten Salt: 1, Monovalent Copper Salt,  $\text{CuCl}$ , T. Yoko, T. Nishiwaki, K. Kamiya and S. Sakka, *J. Am. Ceram. Soc.*, **74**[5], 1104, (1991).

Copper $\rightleftharpoons$ Alkali Ion Exchange of Alkali Aluminosilicate Glasses in Copper-Containing Molten Salt: 2, Divalent Copper Salts,  $\text{CuCl}_2$  and  $\text{CuSO}_4$ , T. Yoko, T. Nishiwaki, K. Kamiya and S. Sakka, *J. Am. Ceram. Soc.*, **74**[5], 1112, (1991).

$\text{Na}^+ \rightleftharpoons \text{Li}^+$  Ion Exchange in Fluoride Glasses, T. Yoko, Y. Kondo, H. Kozuka and S. Sakka, *Mater. Sci. For.*, **67&68**, 595, (1991).

Preparation of  $\text{Li}_2\text{B}_4\text{O}_7$  Thin Films by Sol-Gel Method and Their Characterization, T. Yoko, H. Yamashita and S. Sakka, *SPIE Sol-Gel Optics*, **1328**, 416, (1990).

Preparation of  $\text{Li}_2\text{B}_4\text{O}_7$  Films with Preferential Orientation by Sol-Gel Method, H. Yamashita, T. Yoko and S. Sakka, *J. Am. Ceram. Soc.*, **74**[7], 1668, (1991).

Sol-Gel-Derived  $\text{TiO}_2$  Film Semiconductor Electrode for Photocleavage of Water, T. Yoko, A. Yuasa, K. Kamiya and S. Sakka, *J. Electrochem. Soc.*, **138**[8], 2308, (1991).

Synthesis of  $\text{NiFe}_2\text{O}_4$  Films by Sol-Gel Method and Their Photoelectrochemical Properties, T. Yoko, Y. Inagaki and S. Sakka, *Asahi Glass Zaidan Kenkyu Hokoku*, **56**, 13, (1990), in Japanese.

Electron Spin Resonance Study of Iron Ion Clusters in Borate Glasses, K. Tanaka, K. Kamiya, T. Yoko, S. Tanabe, K. Hirao and N. Soga, *Phys. Chem. Glasses*, **32**[1], 16, (1991).

Electronic Conduction in  $\text{Fe}_2\text{O}_3\text{-TeO}_2\text{-P}_2\text{O}_5$  Glasses: An Explication for High Conductivity of Iron-Containing Tellurite Glasses, K. Tanaka, T. Yoko, M. Nakano, M. Nakamura and K. Kamiya, *J. Non-Cryst. Solids*, **125**, 264, (1990).

Sol-Gel Preparation of Amorphous  $\text{Li}_2\text{B}_4\text{O}_7$  Coating Films, H. Yamashita, T. Yoko and S. Sakka, *Thin Solid Films*, **189**, L5, (1990).

Effect of Sulfur Doping on the Structure and Properties of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  Superconductor, H. Kozuka, S. Fujihara, T. Yoko and S. Sakka, *Jpn. J. Appl. Phys.*, **29**[9], L1608, (1990).

Glass Formation in  $\text{Bi}_2\text{O}_3\text{-CaO-CuO}$  and  $\text{Bi}_2\text{O}_3\text{-SrO-CuO}$ , F. Miyaji, T. Yoko and S. Sakka, *J. Non-Cryst. Solids*, **126**, 170, (1990).

Functional Ceramics Prepared by Sol-Gel Method, S. Sakka, *Funtai to Kogyo*, **22**[10], 29, (1990), in Japanese.

Low Temperature Sol-Gel Synthesis of Advanced Inorganic Materials, S. Sakka, "Proceedings of the 6th IFC Symposium", 43, (1990).

Sol-Gel Method and Its Applications, S. Sakka, *Tetsu to Hagane*, **77**[3], 12, (1991), in Japanese.

Preparation of Functional Materials by Sol-Gel Method, S. Sakka, *Kagaku*, **45**[9], 660, (1990), in Japanese.

Ceramics Materials, S. Sakka, In "Sentan Zairyo no Kiso Chishiki", Omusha, 38, (1991), in Japanese.

Sol-Gel Processing of Electro-Conducting Ceramic Fibers, S. Sakka, Proceedings of International Workshop for Fine Ceramics Number 1, Japan Fine Ceramics Center, March 14-15, (1990).

Photoelectrochemical Studies of Oxide Semiconductor Film Electrodes Prepared by the Sol-Gel Method, T. Yoko, K. Kamiya and S. Sakka, In "Ceramics Today-Tomorrow's Ceramics", P. Vincenzini (Editor), Elsevier Science Publishers B.V., **66B**, 2581 (1991).

Organometallic-Derived Ceramics, S. Sakka and T. Yoko, In "Ceramics Today-Tomorrow's Ceramics", P. Vincenzini (Editor), Elsevier Science Publishers B.V., **66B**, 813 (1991).

The Bone-Bonding Behavior of Two Glass-Ceramics (KGS and A-W GC), S. Kotani, T. Yamamuro, T. Nakamura, T. Kitsugi, Y. Fujita, K. Kawanabe T. Kokubo and C. Ohtsuki, *Bioceramics*, **2**, 105, (1990).

Surface Structure of Bioactive Glass-Ceramic A-W Implanted into Sheep and Human Vertebra, T. Kokubo, C. Ohtsuki, S. Kotani, T. Kitsugi and T. Yamamuro, *Bioceramics*, **2**, 113, (1990).

Apatite Coating on Various Substrates in Simulated Body Fluid, T. Kokubo, H. Kushitani, Y. Abe and T. Yamamuro, *Bioceramics*, **2**, 235, (1990).

Pre-Clinical Application of A-W Glass-Ceramic to Various Orthopaedic Conditions, T. Yamamuro, J. Shikata, H. Okumura, S. Yoshii, S. Kotani and T. Kokubo, *Bioceramics*, **2**, 361, (1990).

A Bioactive Glass Powder-Ammonium Hydrogen Phosphate Composite for Repairing Bone Defects, Y. Taguchi, T. Yamamuro, T. Nakamura, K. Ono, N. Nishimura, T. Kokubo, E. Takahata, M. Takagi and S. Yoshihara, *J. Appl. Biomater.*, **1**, 217, (1990).

Bonding Mechanism of Bioactive Glass-Ceramic A-W to Living Bone, T. Kokubo, "Handbook of Bioactive Ceramics", **1**, 41, (1990).

Bone-Bonding Capability and Mechanical Properties of Modified A-W Glass-Ceramics (Animal Studies), S. Yoshii, T. Yamamuro, T. Kitsugi, T. Nakamura, T. Kokubo, M. Oka, T. Shibuya and M. Takagi, "Handbook of Bioactive Ceramics", **1**, 51, (1990).

The Influence of Substituting  $B_2O_3$  for  $CaF_2$  on the Bonding Behavior of A-W Glass-Ceramic to Bone Tissue, T. Kitsugi, T. Yamamuro, S. Yoshii, T. Kokubo, M. Takagi and T. Shibuya, "Handbook of Bioactive Ceramics", **1**, 65, (1990).

Surface Reactions of Calcium Phosphate Ceramics and Glass-Ceramics to Various Physiological Solutions, K. Hyakuna, T. Yamamuro, T. Kotoura, M. Oka and T. Kokubo, "Handbook to Bioactive Ceramics", **1**, 125, (1990).

Replacement of the Lumber Vertebrae of Sheep with Ceramic Prostheses, T. Yamamuro, J. Shikata, H. Okumura, T. Kitsugi, Y. Kakutani, T. Matsui and T. Kokubo, *J. Bone and Joint Surg.*, **72-B**, 889, (1990).

Apatite Coating on Ceramics, Metals and Polymers Utilizing a Biological Process, Y. Abe, T. Kokubo and T. Yamamuro, *Materials in Medicine*, **1**, 233, (1990).

Bioactivity of  $CaO-SiO_2$ -Based Glasses: In Vitro Evaluation, Y. Ebisawa, T. Kokubo, K. Ohura and T. Yamamuro, *Materials in Medicine*, **1**, 239, (1990).

Compositional Dependence of Bioactivity of Glasses in the System  $CaO-SiO_2-P_2O_5$ : Its in Vitro Evaluation, C. Ohtsuki, T. Kokubo, K. Takatsuka and T. Yamamuro, *Seramikkusu Ronbunshi*, **99**, 1, (1991).

Crystallization of  $(FeO, Fe_2O_3)-CaO-SiO_2$  Glasses and Magnetic Properties of Their Crystallized Products, Y. Ebisawa, Y. Sugimoto, T. Hayashi, T. Kokubo, K. Ohura and T. Yamamuro, *Seramikkusu Ronbunshi*, **99**, 7, (1991).

Bioactive Glass-Ceramics; Properties and Applications, T. Kokubo, *Biomaterials*, **12**, 155, (1991).

Bone-Bonding Ability of  $P_2O_5$ -Free  $CaO-SiO_2$  Glasses, K. Ohura, T. Nakamura, T. Yamamuro, T. Kokubo, Y. Ebisawa, Y. Kotoura and M. Oka, *J. Biomed. Mater. Res.*, **25**, 357, (1991).

The Formation  $SrFe_{12}O_{19}$  from Aqueous Suspensions and Its Properties, M. Kiyama, N. Nagai, M. Maekawa and T. Takada, *Bull. Inst. Chem. Res. Kyoto Univ.*, **68**, 269, (1991).

The Growth of  $\alpha-Fe_2O_3$  Particles by Transformation at  $200^\circ C$  of Iron(III) Hydroxide in the Alkaline Media Containing Slight Amounts of Other Metal Ions, M. Kiyama, T. Kurata, T. Nakamura and T. Takada, *Bull. Inst. Chem. Res. Kyoto Univ.*, **68**, 275, (1991).

New Glasses for Biomedical Applications, T. Kokubo, C. Ohtsuki and Y. Aoki, *Kagaku Kogyo*, **41**, 666, (1990).

Properties and Applications of Bioactive Glass-Ceramics, T. Kokubo, "Recent Progress in Artificial Joint and Biomaterials", 238, (1990).

Ceramic Able to Bond to Living Bone, T. Kokubo and C. Ohtsuki, *New Ceramics*, **4**, 77, (1991).

Materials for Bone Replacement, T. Kokubo, "New Glass Handbook", 552, (1991).

Materials for Miscellaneous Medical Applications, T. Kokubo, "New Glass Handbook", 565, (1991).

Ceramics for Biomedical Applications, T. Kokubo, *Nihon Kinzoku Gakkai Kaiho*, **30**, 490, (1991), in Japanese.

Ceramics Compatible to Bone, T. Kokubo, "New Materials for Biomedical Applications-Recent Progress in Biofunctional Materials", 35, (1991).

Depth Selective Mössbauer Spectroscopic Study of  $\text{Fe}_3\text{O}_4$  Epitaxial Films, T. Fujii, M. Takano, R. Katano, Y. Bando and Y. Isozumi, *J. Appl. Phys.*, **68**[4], 1735, (1990).

Anomalous Misfit Strain Relaxation in Ultrathin  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Epitaxial Films, K. Kamigaki, H. Terauchi, T. Terashima, Y. Bando, K. Iijima, K. Yamamoto, K. Hirata, K. Hayashi, I. Nakagawa and T. Tomii, *J. Appl. Phys.*, **69**[6], 3656, (1990).

Measurements of the Noise Power Spectrum from High Temperature Superconducting Films, A. Hirai, T. Hotta, K. Shinoda, M. Sato, S. Sasaki, K. Iijima, K. Yamamoto, K. Hayashi, K. Hirata, T. Terashima and Y. Bando, *Cryogenics*, **30**, 910, (1990).

Angle-Resolved Photoemission from Epitaxial  $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_4(001)$  Films, Y. Sakisaka, T. Maruyama, Y. Morikawa, H. Kato, K. Edamoto, M. Okusawa, Y. Aiura, H. Yanashima, T. Terashima, Y. Bando, K. Iijima, K. Yamamoto and K. Hirata, *Solid State Commun*, **74**[7], 609, (1990).

Pb-substitution Effects in BSCCO Superconductor, Y. Ikeda, S. Shimura, Z. Hiroi, H. Ito, M. Takano and Y. Bando, *Funtai oyobi Funmatsu Yakin*, **37**[5], 729, (1990), in Japanese.

The High-Tc Phase with  $T_c=117\text{K}$  in the Bi,Pb-Sr-Ca-Cu-O System, J. Takada, H. Kitaguchi, K. Oda, Y. Miura, H. Mazaki, H. Ito, Y. Ideda and M. Takano, *Funtai oyobi Funmatsu Yakin*, **37**[5], 734, (1990), in Japanese.

Effect of  $\text{Sb}_2\text{O}_3$  Addition on the Formation of the Superconductive Phases in Bi-Pb-Sr-Ca-Cu-O System, K. Ohhashi, S. Yada, S. Naka, H. Itoh, H.H. Kitagushi, J. Takada, Y. Tomii, Y. Ikeda and M. Takano, *Funtai oyobi Funmatsu Yakin*, **37**[5], 747, (1990), in Japanese.

Synthesis of  $\text{La}_{2-x}\text{Nd}_x\text{CuO}_{4+z}$  under High Oxygen Pressure, Y. Takada, K. Yoshikawa, O. Yamamoto, M. Takano and Y. Bando, *Funtai oyobi Funmatsu Yakin*, **37**[5], 765, (1990), in Japanese.

Ac-susceptibility in Oxide Superconductor of Y-system, (II) Single Crystal,

K. Yamamoto, K. Hirata, K. Iijima, K. Hayashi, H. Mazaki, H. Yasuoka, T. Terashima and Y. Bando, *Funtai oyobi Funmatsu Yakin*, **37**[5], 799, (1990), in Japanese.

Effect of Some Additive Oxides on Preparation of  $\text{Bi}_{1.8}\text{Pb}_{0.4}\text{Sr}_{2.0}\text{Ca}_{2.0}\text{Cu}_{3.2}\text{O}_y$  Superconductor Ceramics, J. Takada, H. Kitaguchi, S. Yada, K. Ohhashi, S. Naka, Y. Tomii, H. Itoh and M. Takano, *Funtai oyobi Funmatsu Yakin*, **38**[2], 287, (1990), in Japanese.

The Formation Process of the High-Tc Phase in the Bi-Pb-Sr-Ca-Cu-O System, H. Ito, Y. Ikeda, Z. Hiroi, M. Takano, Y. Bando, J. Takada, T. Egi, H. Kitaguchi and K. Oda, *Funtai oyobi Funmatsu Yakin*, **37**[5], 743, (1990), in Japanese.

Reflection High-Energy Electron Diffraction Oscillations during Epitaxial Growth of High Temperature Superconducting Oxides, T. Terashima, Y. Bando, K. Iijima, K. Yamamoto, K. Hirata, K. Hayashi, K. Kamigaki and H. Terauchi, *Phys. Rev. Lett.*, **65**[21], 2684, (1990).

Conversion Electron Mössbauer Spectroscopy of a Single Crystalline  $\text{Bi}_3\text{Fe}_5\text{O}_{12}$  Film, T. Fujii, M. Takano, R. Katano, Y. Bando, Y. Isozumi and T. Okuda, *J. Mag. Mag. Mat.*, **92**, 261, (1990).

Epitaxial Growth Manner and Structure of Superconducting Oxide Films, Y. Bando, T. Terashima, K. Iijima, K. Yamamoto, K. Hirata, K. Hayashi, K. Kamigaki and H. Terauchi, "Proc. XIIth Int. Cong. for Electron Microscopy, Seattle, Aug. 12-18, 1990 (Eds. L.D. Peachey, D.B. Williams) Material Science", **4**, 2, (1990).

Specific-heat Anomaly near  $T_c$  of the (Bi,Pb)-Sr-Ca-Cu-O Superconductor ( $T_c=107\text{K}$ ), N. Okazaki, T. Hasegawa, K. Kishio and K. Kitazawa, *Phys. Rev. B*, **41**[7], 4296, (1990).

Angle-resolved Photomission from  $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_4(001)$ : A Dispersive Bandlike Fermi-liquid State of Cu 3d Character near the Fermi Level, Y. Sakisaka, T. Maruyama, Y. Morikawa, H. Kato, K. Edamoto, M. Okusawa, Y. Aiura, H. Yanashima, T. Terashima, Y. Bando, K. Iijima, K. Yamamoto and K. Hirata, *Phys. Rev. B*, **42**[7], 4189, (1990).

Magnetic Properties of  $\text{Nd}_2\text{CuO}_4$ -type  $\text{R}_2\text{CuO}_4$  ( $\text{R}=\text{Y}, \text{Dy}, \text{Ho}, \text{Er}, \text{Tm}$ ) Synthesized under High Pressure: Weak Ferromagnetism of  $\text{Y}_2\text{CuO}_4$ , H. Okada, M. Takano and Y. Takeda, *Phys. Rev. B*, **42**[10], 6813, (1990).

X-ray Study on Ultra-Thin  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Single Crystal Film in Situ Grown by an Activated Reactive Evaporation Method, K. Kamigaki, H. Terauchi, T. Terashima, Y. Bando, K. Iijima, K. Yamamoto and K. Hirata, *Solid State Ionics*, **40/41**, 815, (1990).

Anisotropic Magnetoresistance of  $\text{GdBa}_2\text{Cu}_3\text{O}_y$  Film, T. Tamura, F. Nakamura, K. Senoh, Y. Ochiai, T. Terashima, K. Iijima, K. Yamamoto, K. Hirata, Y. Bando and Y. Narahara, *Physica C.*, **169**[3&4], 299, (1990).

Superconductor with  $T_c=117\text{K}$  in the Bi-Pb-Sr-Ca-Cu-O System, J. Takada, H. Kitaguchi, T. Egi, K. Oda, Y. Miura, H. Mazaki, Y. Ikeda, Z. Hiroi, M. Takano and Y. Tomii, *Physica C.*, **170**[3&4], 249, (1990).

Growth and Tunneling Spectroscopy of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  /Insulator/  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$



Junctions, K. Hirata, K. Iijima, K. Yamamoto, K. Hayashi, T. Terashima and Y. Bando, *Physica B*, **165&166**, 1593, (1990).

Electron Microscopy Study of Oxide Superconductors, Z. Hiroi, Y. Ikeda, M. Takano and Y. Bando, *Physica B*, **165&166**, 1693, (1990).

Preparation of  $\text{PbTiO}_3$  Films by Activated Reactive Evaporation (ARE), T. Okamura, K. Oda, J. Takada, A. Osaka, Y. Miura, T. Terashima and Y. Bando, *Nihon Seramikkusu Kyokai Gakujutu Ronbunshi*, **98**[8], 749, (1990), in Japanese.

Rheed Oscillations During Growth of High-Tc Superconducting Oxides, T. Terashima, K. Shimura, Y. Bando, K. Iijima, K. Yamamoto, K. Hirata, K. Hayashi, K. Kamigaki and H. Terauchi, "Ads, in Superconductivity III: Proc. 3rd Int. Symp. Superconductivity (ISS'90), Nov. 6-9, 1990, Sendai (eds. K. Kajimura, H. Hayakawa) Springer-Verlag", 851, (1990).

Optical Properties of Single-Crystal  $\text{YBa}_2\text{Cu}_3\text{O}_y$  Thin Films, H. Yasuoka, H. Mazaki, T. Terashima and Y. Bando, "Adv. in Superconductivity III: Proc. 3rd Int. Symp. Superconductivity (ISS'90), Nov. 6-9, 1990, Sendai (eds. K. Kajimura, H. Hayakawa) Springer-Verlag", 203, (1991).

Modulated Structure in  $\text{Bi}_{2+x}\text{Sr}_{2-x}\text{Cu}_{1+y}\text{O}_{6+\delta}$ , Z. Hiroi, Y. Ikeda, M. Takano and Y. Bando, *J. Master. Res*, **6**[3], 435, (1991).

Optical Absorption Spectra of Single-crystal  $\text{YBa}_2\text{Cu}_3\text{O}_y$  Films, H. Yasuoka, H. Mazaki, T. Terashima and Y. Bando, *Physica C*, **175**[1&2], 192, (1991).

Superconductivity in the Ba-Sr-Cu-O System, M. Takano, M. Azuma, Z. Hiroi and Y. Bando, *Physica C*, **176**[4-6], 441, (1991).

Anomalous Angular Dependence of Dissipation in Layered High-temperature Superconductors, Y. Iye, T. Terashima and Y. Bando, *Physica C*, **177**[4-6], 393, (1991).

Transport Critical Currents of Single-Crystal  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\gamma}$  Thin Films in Weak Magnetic Fields Applied at Varied Angles to Film Surface, T. Aomine, T. Nishizaki, T. Fujii, T. Terashima, K. Iijima, K. Hirata, K. Hayashi, K. Yamamoto and Y. Bando, *Jpn. J. Appl. Phys.*, **30**[1b], L103, (1991).

Phase Diagram for the  $\text{YO}_{1.5}\text{-CaO-CuO}$  System, Y. Kawamura, T. Shigematsu, N. Nakanishi, T. Ikeda, Z. Hiroi, M. Takano, Y. Bando, Y. Takeda and O. Yamamoto, *Funtai oyobi Funmatsu Yakin*, **38**[2], 219, (1991), in Japanese.

Effects of Grinding and Uniaxial Press-forming on Sintered Superconductor in the Bi-Pb-Sr-Ca-Cu-O System, H. Itoh, S. Yada, S. Naka, J. Takada, Y. Tomii and M. Takano, *Funtai oyobi Funmatsu Yakin*, **38**[2], 233, (1991), in Japanese.

Effect of Ba Addition to the High-Tc Phase in the Bi-Pb-Sr-Ca-Cu-O System (II), J. Takada, K. Oda, T. Egi, M. Fujiwara, H. Kitaguchi, Y. Miura, H. Mazaki, Y. Tomii, Y. Ikeda, Z. Hiroi and M. Takano, *Funtai oyobi Funmatsu Yakin*, **38**[2], 275, (1991), in Japanese.

The Effect of Pb Addition for the 30 A Phase in the Bi-Sr-Ca-Cu-O System, H. Ito, Y. Ikeda, Z. Hiroi, M. Takano and Y. Bando, *Funtai oyobi Funmatsu Yakin*, **38**[2], 279, (1991), in Japanese.

Ba-Substitution Effects in  $\text{Bi}_{2+x}\text{Sr}_{2-x}\text{Cu}_{1+x/4}\text{O}_z$  Solid Solution, Y. Ikeda, T.M. Kyaw, Z. Hiroi, M. Takano and Y. Bando, *Funtai oyobi Funmatsu Yakin*, **38**[2], 283, (1991), in Japanese.

Mössbauer Study on the Magnetic Properties of a Single Crystalline  $\text{Bi}_3\text{Fe}_5\text{O}_{12}$  Film, T. Fujii, M. Takano, Y. Bando and T. Okuda, *Funtai oyobi Funmatsu Yakin*, **38**[3], 115, (1991), in Japanese.

Solid State Chemistry of Perovskite and Related Oxides Containing  $\text{Fe}^{4+}$ ,  $\text{Ni}^{3+}$ , and  $\text{Cu}^{2+}$ , M. Takano, Chem. Electronic Cer. Mat., Proc. Int. Conf., Jakson, Aug. 17-22, 1990 (NIST Special Pub. 804), 255, (1991).

Superconductivity of  $\text{La}_{2-x}\text{Nd}_x\text{CuO}_{4+z}$  Prepared under High Oxygen Pressure: Suppression of the Phase Separation Seen in  $\text{La}_2\text{CuO}_{4+z}$ , Y. Takeda, K. Yoshikawa, O. Yamamoto and M. Takano, *J. Solid State Chem.*, **92**, 241, (1991).

Ordering of Interstitial Oxygen Atoms in  $\text{La}_2\text{NiO}_{4+\delta}$ , Z. Hiroi, M. Takano and Y. Bando, *Supercond. Sci. Technol.*, **4**, S139, (1991).

Behaviours of Transport Critical Currents in Low Magnetic Fields for  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Single Crystalline Films, T. Aomine, T. Nishizaki, I. Fujii, T. Terashima, K. Iijima, K. Hirata, K. Hayashi, K. Yamamoto and Y. Bando, *Superocond. Sci. Technol.*, **4**, S373, (1991).

The Hydrogenation of Carbon Monoxide over the Periodically Multilayered  $\text{Co-SiO}_{1+x}$  Films, T. Shigematsu, N. Nakanishi, T. Terashima and Y. Bando, *Chemistry Express*, **6**[4], 249, (1991).

Fabrication and Crystal Growth Process of High Tc Superconducting Thin Film by Reactive Evaporation, Y. Bando and T. Terashima, *Shinkuu*, **33**[11], 841, (1990), in Japanese.

Structure Design of High Temperature Superconductors Using Epitaxial Growth, T. Terashima and Y. Bando, *Kotai Butsuri*, **25**[12], 984, (1991), in Japanese.

High-Tc Superconducting Superlattices and Ultrathin Films, T. Terashima and Y. Bando, *NSMF NEWS*, **25**, 13, (1991), in Japanese.

Growth Process of Artificial Superlattices of High-Tc Superconducting Oxides, Y. Bando and T. Terashima, *Ouyou Butsuri*, **60**[5], 474, (1991), in Japanese.

Electron Microscopy of Au/Ni Artificial Superlattice Films, H. Dohnomae, N. Nakayama and T. Shinjo, *Materials Transactions JIM*, **31**, 615-621, (1990).

$^{57}\text{Fe}$  and  $^{57}\text{Co}$  Mössbauer Studies of High-Tc Y-Ba-Cu Oxides, S. Nasu, M. Yoshida, Y. Oda, K. Asayama, F.E. Fujita, K. Ueda, T. Kohara, T. Shinjo, S. Katsuyama,

Y. Ueda, and K. Kosuge, Advances in Superconductivity II (Proceedings of the 2nd International Symposium on Superconductivity (ISS '89), 559–562, (1990).

$^{57}\text{Fe}$  and  $^{57}\text{Co}$  Mössbauer Studies of High- $T_c$  Y-Ba-Cu Oxides, S. Nasu, M. Yoshida, Y. Oda, T. Kohara, T. Shinjo, K. Asayama, F.E. Fujita, S. Katsuyama, Y. Ueda and K. Kosuge, *J. Magn. Magn. Mater.*, **90&91**, 664–666, (1990).

$^{57}\text{Fe}$  Mössbauer Study of High- $T_c$  Y-Ba-Cu Oxide Superconductors, S. Nasu, H. Kitagawa, M. Yoshida, Y. Oda, K. Asayama, F.E. Fujita, K. Ueda, T. Kohara and T. Shinjo, *Hyperfine Interactions*, **55**, 1355–1362, (1990).

Preparation and Magnetic Properties of Epitaxial Fe/Au(001) Superlattice Films, T. Okuyama and T. Shinjo, *Nihon Ouyou Ziki Gakkaishi*, **14**, 343–346, (1990), in Japanese.

Large Magnetoresistance of Field-Induced Giant Ferrimagnetic Multilayers, T. Shinjo and H. Yamamoto, *J. Phys. Soc. Jpn.*, **59**, 3061–3064, (1990).

Magnetic and Transport Studies on RagSn (R: rare earth metals), A. Adam, J. Sakurai, Y. Yamaguchi, H. Fujiwara, K. Mibu and T. Shinjo, *J. Magn. Magn. Mater.* **90&91**, 544–546, (1990).

Magnetic Properties of Fe/Nd Artificial Superstructure Films, K. Mibu, N. Hosoiito and T. Shinjo, *Hyperfine Interactions*, **54**, 831–838, (1990).

Magnetic Properties of GdFe/Fe Multilayered Films, H. Dohnomae and T. Shinjo, *Nihon Ouyou Ziki Gakkaishi*, **14**, 331–334, (1990), in Japanese.

Magnetism and Magnetoresistance of Multilayers with Artificial Superstructures, T. Shinjo, S. Araki and N. Hosoiito, *J. Magn. Magn. Mater.*, **90&91**, 753–757, (1990).

Magnetization Process of GdFe/Fe Superlattices, H. Dohnomae, T. Shinjo and M. Motokawa, *J. Magn. Magn. Mater.* **90&91**, 88–90, (1990).

Magnetoresistance of Multilayers, T. Shinjo, *Progr. Theor. Phys., Suppl.*, **101**, 529–535, (1990).

$^{119}\text{Sn}$  and  $^{57}\text{Fe}$  Mössbauer Study of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ , T. Shinjo, S. Nasu, T. Mizutani, K. Shintaku N. Hosoiito, K. Matsukuma and T. Takabatake, *Hyperfine Interactions*, **55**, 1379–1386, (1990).

X-ray Diffraction Study of Mn/Sb Multilayered Films with Artificial Superstructures, I. Moritani, N. Nakayama and T. Shinjo, *J. Phys.: Condens. Matter.*, **2**, 9719–9733, (1990).

Structure of Metallic Superlattices, N. Nakayama, H. Dohnomae and T. Shinjo, *Nihon Denshi Kenbikyoku Gakkai Dai35kai Sinpoziumu*, 72–75, (1990), in Japanese.

Amorphous-to-Crystalline Transformation of Ultrathin Fe Layers:  $^{57}\text{Fe}$  Mössbauer Study of Artificial Multilayers, T. Shinjo, *Struct. Chem.*, **2**, 281–288, (1991).

Analysis of Magnetization Process in Fe/GdFe Multilayers, H. Dohnomae, T. Shinjo and M. Motokawa, *J. Magn. Magn. Mater.* **93**, 477–479, (1991).

Structural and Magnetic Studies on Fe/Cr Multilayers, S. Araki, O. Kohmoto, Y. Narumiya and T. Shinjo, *Magnetikkusu Kenkyukai Shirou* (MAG-91-50), 1–8, (1991), in Japanese.

Ferromagnetic Resonance of Exchange-Coupled Fe/Au/Fe Trilayers, H. Yamazaki, Y. Ajiro, N. Hosoiito and T. Shinjo, *J. Phys. Soc. Jpn.*, **60**, 764–767, (1991).

Interface Magnetism, T. Shinjo, *Surface Science Reports*, **12**, 49–98, (1991).

Magnetic Properties and magnetoresistance of Multilayers with Two different Magnetic Layers, H. Yamamoto, T. Okuyama, H. Dohnomae and T. Shinjo, *Nihon Ouyou Zikigakkaishi*, **15**, 431–436, (1991), in Japanese.

Magnetic Properties of Fe/Tb Multilayered Films Studied by Mössbauer Spectroscopy, B. Scholz, R.A. Brand, W. Keune, U. Kirschbaum, E.F. Wassermann, K. Mibu and T. Shinjo, *J. Magn. Magn. Mater.*, **93**, 499–502, (1991).

Mössbauer Investigation of the Magnetic Properties of Amorphous FeZr-interface Layers Formed by Solid State Reaction, W. Kiauka, W. Keune, T. Shinjo and N. Hosoiito, *J. Magn. mang. Mater.* **93**, 494–498, (1991).

Preparation and Magnetic Properties of V Monolayers in V/Ag Multilayered Films, K. Shintaku, T. Mizutani, N. Hosoiito and T. Shinjo, *J. Phys. Soc. Jpn.*, **60**, 1078–1084, (1991).

Structural and Magnetic Properties of 3d/Sb Multilayers, T. Shinjo, N. Nakayama, I. Moritani, H. Dohnomae and S. Sugiyama, *J. Magn. Magn. Mater.*, **93**, 35–38, (1991).

### Organic Chemistry

A New, Highly Efficient, and Simple Procedure for the Construction of Medium-Sized Nitrogen Heterocyclic Ring System, B.R. Babu, M. Goto, M. Higaki, T. Sugiyama, K. Nakamura and A. Ohno, *Bull. Chem. Soc. Jpn.*, **63**, 2742, (1990).

The Photo-Reduction of 10-Methylacridinium Ion by Triphenylphosphine through One-Electron Transfer Mechanism, S. Yasui and A. Ohno, *Tetrahedron Lett.*, **32**, 1047, (1991).

Stereospecificity Observed in Base-Catalyzed Electrochemical Oxidation, M. Okamura, T. Kashiwagi, Y. Mikata, T. Maruyama and A. Ohno, *Tetrahedron Lett.*, **32**, 1475, (1991).

NAD(P)<sup>+</sup>-NAD(P)H Models. 71. Isotope Effects to Prove the Multi-Step Mechanism in the Reduction with an NAD(P)H Analog, M. Goto, Y. Mikata and A. Ohno, *Bull. Chem. Soc. Jpn.*, **63**, 2682, (1990).

NAD(P)<sup>+</sup>-NAD(P)H Models. 73. Structure-Stereochemistry Relationship in the Reaction of NAD Analog, A. Ohno, Y. Mikata, M. Goto, T. Kashiwagi, T. Tanaka and M. Sawada, *Bull. Chem. Soc. Jpn.*, **64**, 81, (1991).

NAD(P)<sup>+</sup>-NAD(P)H Models. 74. Entropy-Controlled Kinetics, Stereochemistry, and Tunneling Effect, A. Ohno, M. Goto, Y. Mikata, T. Kashiwagi and T. Maruyama, *Bull.*

*Chem. Soc. Jpn.*, **64**, 87, (1991).

Asymmetric Synthesis of a Pheromone for *Andrena Haemorrha* F from a Chiral Nitro Alcohol Obtained by the Yeast Reduction of a Nitro Ketone, K. Nakamura, T. Kitayama, Y. Inoue and A. Ohno, *Tetrahedron*, **46**, 7471, (1990).

Enhanced Enantioselectivity of the Lipase-catalyzed Hydrolysis by the Addition of a Catalytic Amount of an Amino Alcohol, T. Itho, E. Ohara, Y. Takagi, S. Nishiyama and K. Nakamura, *Bull. Chem. Soc. Jpn.*, **64**, 624, (1991).

Stereochemical Control of Microbial Reduction. 17. Mechanism for Controlling the Enantioselectivity of Reduction with Bakers' Yeast, K. Nakamura, Y. Kawai, N. Nakajima and A. Ohno, *J. Org. Chem.*, **56**, 4778, (1991).

Stereochemical Control in Microbial Reduction. 18. Mechanism of Stereochemical Control in the Diastereoselective Reduction with Bakers' Yeast, K. Nakamura, Y. Kawai, N. Nakajima, T. Miyai, S. Honda and A. Ohno, *Bull. Chem. Soc. Jpn.*, **64**, 1467, (1991).

Stereochemical Control in Microbial Reduction. 19. Effect of Heat-Treatment on the Diastereoselectivity in the Reduction with Bakers' Yeast, K. Nakamura, Y. Kawai and A. Ohno, *Tetrahedron Lett.*, **32**, 2927, (1991).

Stereochemical Control in Microbial Reduction, K. Nakamura and A. Ohno, *Yuuki Gousei Kagaku Kyoukai* (*J. Synthetic Organic Chemistry, Japan*), **49**, 110, (1991).

Dissociative Excitation of  $C_2H_2$  and  $C_2D_2$  at Ne(I) Resonance Lines, T. Ibuki, M. Ono and N. Sugita, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 248, (1990).

Carbonylation of Formaldehyde and its Derivatives, N. Sugita, *Sekiyu Gekkaishi*, **34**, 13, (1991), in Japanese.

Rh(III)-Catalyzed Synthesis of Acetonaphthones from Naphthalenes under Pressure of Carbon Monoxide, K. Kudo, Y. Kume, S. Mori and N. Sugita, *Chem. Express*, **6**, 225, (1991).

Preparation and Utilization of 2-(2H-Benzotriazol-2-yl)phenolic Compounds, S. Tanimoto and Y. Inoue, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 309, (1991).

Stereoselective Reduction of  $\alpha$ -Alkoxyacylketene Dithioacetals with the Use of  $Me_2Cu(CN)Li_2$ , M. Hojo and S. Tanimoto, *J. Chem. Soc., Chem. Commun.*, 1284, (1990).

Amidoselenation of Olefins Using *p*-Toluenesulfonamide as a Nitrogen Nucleophile, A. Toshimitsu, T. Kusumoto, T. Oida and S. Tanimoto, *Bull. Chem. Soc. Jpn.*, **64**, 2148, (1991).

Diphenylsilane Reduction of C = O and C = N Bearing Electron-Withdrawing Group in the Presence of Aluminum(III) Chloride, Makoto Hojo, Masahiro Hojo, Y. Inoue and S. Tanimoto, *Bull. Chem. Soc. Jpn.*, **63**, 2588, (1990).

Synthesis of 2-(Trimethylsilyl)ethyl Benzenesulfenate and Benzeneselenenate and Their Reaction with Some Electrophiles in the Presence of Tetrabutylammonium Fluoride,

T. Oida, A. Ohnishi, T. Shimamaki, Y. Hayashi and S. Tanimoto, *Bull. Chem. Soc. Jpn.*, **64**, 702, (1991).

Structure Analysis of Glutathione Synthetase from *Escherichia coli* B, H. Yamaguchi, H. Kato, Y. Hata, T. Nishioka, Y. Katsube, J. Oda and A. Kimura, *Acta Crystallogr.*, **A46**, C132, (1990).

Structure Refinement of Glutathione Synthetase from *Escherichia coli* B, H. Yamaguchi, H. Kato, Y. Hata, T. Nishioka, Y. Katsube and J. Oda, *Photon Factory Activity Report*, **8**, 87, (1991).

Similarity Graphing and Enzyme-Reaction Database: Methods to Detect Sequence Regions of Importance for Recognition of Chemical Structure, K. Sumi, T. Nishioka and J. Oda, *Protein Engineering*, **4**, 413, (1991).

Lipase from *Pseudomonas* sp.: Reactions, Cloning, and Amino Acid Sequence Analysis, T. Nishioka, M. Chihara-Shiomi, K. Yoshikawa, M. Inagaki, Y. Yamamoto, J. Hiratake, N. Baba and J. Oda, *Lipase: Structure, Mechanism and Genetic Engineering (GBF Monographs)*, **16**, 253, (1991).

New Synthetic Route to Unsymmetrically Substituted Pentacoordinated Phosphorous. Hydrolytically Stable Chiral Monocyclic Oxyphosphoranes, R.M. Moriarty, J. Hiratake and K. Liu, *J. Am. Chem. Sci.*, **112**, 8575, (1990).

Frontier of Catalytic Antibody, J. Hiratake, *Kagaku*, **45**, 839, (1990), in Japanese.

Asymmetric Synthesis of 5- and 6-Membered Lactones from Cyclic Substrates Bearing a C<sub>2</sub>-Chiral Auxiliary, Y. Yamamoto, A. Sakamoto, T. Nishioka, J. Oda and Y. Fukazawa, *J. Org. Chem.*, **56**, 1112, (1991).

Asymmetric Synthesis of Optically Active 3-Substituted  $\delta$ -Valerolactones Using Lipase in Organic Solvents, Y. Yamamoto, M. Iwasa, S. Sawada and J. Oda, *Agric Biol. Chem.*, **54**, 3269, (1990).

Lipase-catalyzed Kinetic Resolution of Racemic Methyl 13-Hydroperoxy-9Z,11E-octadecadienoate in an Organic Solvent, N. Baba, K. Tateno, J. Iwasa and J. Oda, *Agric Biol. Chem.*, **54**, 3349, (1990).

Application of Enzymatic Reaction to Asymmetric Synthesis — Lipase as a Catalyst —, Y. Yamamoto and J. Oda, *Kagaku-zoukan*, **119**, 125, (1991), in Japanese.

Visible Light Induced DNA Cleavage by the Hybrid Antitumor Antibiotic Dynemicin A, T. Shiraki and Y. Sugiura, *Biochemistry*, **29**[42], 9795, (1990).

A New Access to Chiral Aziridines by Enzymatic Transesterification of Meso-Bis(Acetoxymethyl) Aziridines, K. Fuji, T. Kawabata, Y. Kiryu, Y. Sugiura, T. Taga and Y. Miwa, *Tetrahedron Lett.*, **31**[46], 6663, (1990).

PAC Study of <sup>111</sup>In-Bleomycin Complex in Solutions, M. Mekata, E. Hamada, Y. Seguchi, Y. Sugiura and M. Kawamura, *Hyperfine Interactions*, **61**, 1179, (1990).

Switch-function of amino sugar on elsamycin A, a DNA binding antitumor antibiotic, M. Uesugi and Y. Sugiura, *Nucleic Acids Research (Sym. Ser.)*, **22**, 33, (1990).

Identification of DNA degradation products by antitumor antibiotic, esperamicin, T. Ebata, H. Hiroaki, S. Uesugi and Y. Sugiura, *Nucleic Acids Research (Sym. Ser.)*, **22**, 19, (1990).

Molecular Design, Synthesis, and Functional Analysis of New Non-heme Iron Complexes with Dioxygen Activation Ability, Y. Sugiura, in "Advanced Molecular Conversion", ed. by N. Sonoda, MYU Press, Tokyo, 60, (1991).

Oxidation of Alkenes by a Chiral Non-Porphyrinic Oxidizing Catalyst Based on the Bleomycin-Fe(II) Complex, A. Suga, T. Sugiyama, M. Otsuka, M. Ohno, Y. Sugiura and K. Maeda, *Tetrahedron*, **47**[7], 1191, (1991).

Reductive and Nucleophilic Activation Products of Dynemicin A with Methyl Thioglycolate. A Rational Mechanism for DNA Cleavage of the Thiol-Activated Dynemicin A, Y. Sugiura, T. Arakawa, M. Uesugi, T. Shiraki, H. Ohkuma and M. Konishi, *Biochemistry*, **30**[12], 2989, (1991).

Complex-Induced Proximity Effects in Enolate Formation. Highly Diastereoselective  $\alpha$ -Methylation of Binaphthyl Esters of Arylacetic Acids, K. Fuji, M. Node and F. Tanaka, *Tetrahedron Lett.*, **31**, 6553, (1990).

A New Access to Chiral Aziridines by Enzymatic Transesterification of Meso-Bis (acetoxymethyl) aziridines, K. Fuji, T. Kawabata, Y. Kiryu, Y. Sugiura, T. Taga and Y. Miwa, *Tetrahedron Lett.*, **31**, 6663, (1990).

Hard Acid and Soft Nucleophile Systems. Part 12. Regioselective Functionalization of 113-Dienes through the Lewes Acid Mediated Thienium Cation Diels-Alder Reaction, K. Fuji, S.P. Khanapure, M. Node, T. Kawabata, A. Itoh and Y. Masaki, *Tetrahedron*, **46**, 7393, (1990).

A Chiral Total Synthesis of (–)-Pysostigmine, M. Node, X. Hao and K. Fuji, *Chem. Lett.*, 57, (1991).

A Chiral Synthesis of an Unique Secodehydroabietane from Tall Oil, K. Fuji, S.-Z. Zheng, M. Node and X.-J. Hao, *Chem. Pharm. Bull.*, **39**, 202, (1991).

Design and Synthesis of Antitumor Compounds Based on the Cytotoxic Diterpenoids from Genus *Rabdosia*, K. Fuji, H. Xu, H. Tatsumi, H. Imahori, N. Ito, M. Node and M. Inaba, *Chem. Pharm. Bull.*, **39**, 685, (1991).

Asymmetric Diels-Alder Cycloaddition with Chiral 2-Alkylsulfinyl-1-nitroalkenes, K. Fuji, K. Tanaka, H. Abe, A. Itoh, M. Node, T. Taga, M. Miwa and M. Shiro, *Tetrahedron: Asymmetry*, **2**, 179, (1991).

The Reductive Repair of Adenine-1-oxide Derivatives to Adenine Derivatives by  $\gamma$ -Glutamylcysteinylglycine (Glutathione), T. Akiyama, K. Tanaka, K. Bessho and F. Yoneda, *Chem. Pharm. Bull.*, **38**, 2893, (1990).

Distereoface-Differentiating Reactions in a New Type of Enzyme Bound 5-Deazaflavin Model, T. Kawamoto, K. Tanaka, Y. Kuroda and F. Yoneda, *Chem. Lett.*, 1197, (1990).

Synthesis of a Proposed Isomer of F420 Having  $\alpha$ -Glutamyl Bonding, T. Kimachi, K. Tanaka and F. Yoneda, *J. Heterocyclic Chem.*, **28**, 439, (1991).

### Polymer Chemistry

An Apparatus for Dynamic Birefringence Measurements, T. Inoue, H. Okamoto, H. Hayashihara and K. Osaki, *Nihon Reoroji Gakkaishi*, **19**[2], 93, (1991).

Self-diffusion of Micelles and Viscoelasticity of Aqueous Detergent Solutions, T. Yamamura, T. Kusaka, E. Takatori, T. Inoue, N. Nemoto, K. Osaki, T. Shikata and T. Kotaka, *Nihon Reoroji Gakkaishi*, **19**[1], 45, (1991).

Self-Diffusion and Viscoelasticity of Linear Polystyrene in Entangled Solutions, N. Nemoto, M. Kishine, T. Inoue and K. Osaki, *Macromolecules*, **24**, 1648, (1991).

Lateral Diffusion of Polymers on the Surface and Interface, N. Nemoto *Hyomen*, **29**, 351, (1991), in Japanese.

On the Concentration Gradient of Polymer Solution in a Rotating Rheometer, K. Osaki and M. Doi, *J. Rheology*, **35**[1], 89, (1991).

Intensity Function for Crystallites with Non-Integral Number of Unit Cells, M. Imai and K. Kaji, *Bull. Inst. Chem. Res., Kyoto Univ.*, **62**, 63, (1990).

Local Motions of cis-1, 4-Polybutadiene in the Melt. A Quasielastic Neutron-Scattering Study, T. Kanaya, K. Kaji and K. Inoue, *Macromolecules*, **24**, 1826, (1991).

Small Angle Neutron Scattering from Poly(vinyl alcohol) Gels, T. Kanaya, M. Ohkura, K. Kaji and M. Furusaka, *KENS Report*, **8**, 191, (1989/1990).

Local Motions of cis-1, 4-Polybutadiene in the Melt, T. Kanaya, K. Kaji and K. Inoue, *KENS Report*, **8**, 195, (1989/1990).

Local Structure of Polyethylene Melt Studied by Pulsed Neutron Total Scattering, M. Misawa, T. Kanaya and T. Fukunaga, *J. Chem. Phys.*, **94**, 8413, (1991).

Structure Characterization of Alginate and Conformational Behaviors of Various Alkali-Metal Alginates in Solution, H. Kawarada, A. Hirai, H. Odani, T. Iida and A. Nakajima, *Polymer Bull.* **24**, 551, (1990).

Theories of Sorption and Transport in Polymer Membrane, H. Odani and T. Uyeda, *Polymer J.*, **23**, 467, (1991).

CP/MAS  $^{13}\text{C}$  NMR Study of Never-Dried Cotton Fibers, A. Hirai, F. Horii and R. Kitamaru, *J. Polym. Sci.: Part C: Polymer Lett.*, **28**, 357, (1990).

Carbon-13 Spin-Lattice Relaxation Behaviour of the Crystalline and Noncrystalline Components of Native and Regenerated Celluloses, A. Hirai, F. Horii and R. Kitamaru,



*Cellulose Chem. Technol.*, **24**, 703 (1990).

$^{13}\text{C}$  CP/MAS NMR Study on Alkali Cellulose, H. Yokota, T. Sei, F. Horii and R. Kitamaru, *J. Appl. Polym. Sci.*, **41**, 783, (1990).

High-Resolution Solid-State  $^{13}\text{C}$  NMR Study of Isotactic Polypropylenes Isothermally Crystallized from the Melt, S. Saito, Y. Moteki, M. Nakagawa, F. Horii and R. Kitamaru, *Macromolecules*, **23**, 3256, (1990).

$^{13}\text{C}$ -NMR Study of Crosslinking and Long-Chain Branching in Linear Polyethylene Induced by  $^{60}\text{Co}$  Gamma Ray Irradiation at Different Temperatures, Q. Zhu, F. Horii, R. Kitamaru and H. Yamaoka, *J. Polym. Sci. Part A: Polym. Chem.*, **28**, 2741, (1990).

Characterization of Fibers by High-Resolution NMR, F. Horii, *Sen-i Gakkaishi*, **46**, 382, (1990), in Japanese.

High-Resolution NMR: Solid-State NMR, F. Horii, *Kobunshi*, **39**, 889, (1990), in Japanese.

$^{13}\text{C}$  NMR Study of the Cellulose-Brightener Complex from Acetobacter-Cultures in the Presence of a Fluorescent Brightener, A. Kai, F. Horii and A. Hirai, *Makromol. Chem., Rapid Commun.*, **12**, 15, (1991).

Stereocomplex Formation between Enantiomeric Poly(lactic acid)s. 2. Stereocomplex Formation in Concentrated Solutions, H. Tsuji, F. Horii, S. Hyon and Y. Ikada, *Macromolecules*, **24**, 2719, (1991).

Diffusion Motions and Microphase Separation of Styrene-Butadiene Diblock Copolymer in Solution. 2. Behavior in n-Decane in the Dilute Solution Region, Y. Tsunashima, *Macromolecules*, **23**, 2963, (1990).

Concentration-Dependent Double-Step Transition of the Diffusion Coefficient in Dilute Solutions of Styrene-Butadiene Diblock Copolymer in Selective Solvent, Y. Tsunashima, *Springer Proceedings in Physics*, **52**, 125, (1990).

Dynamics and Conformations of Diblock Copolymers in Dilute Solution, Y. Tsunashima, *KEK Internal*, **90-26**, 71, (1990).

Cinnamate Ester Containing Liquid Crystalline Side Chain Polymers, M.J. Whitcombe, A. Gilbert, A. Hirai and G.R. Mitchell, *J. Polym. Sci.: Part A: Polym. Chem.*, **29**, 251, (1991).

Polymer Reaction: Chemical Modification of Cellulose, T. Miyamoto and M. Minoda, *Kobunshi*, **39**, 892, (1990), in Japanese.

Effects of Chain Length and Its Distribution on Thermotropic Mesophase Structure of Tri-O-Heptyl Cellulose, A. Takada, T. Fukuda, T. Miyamoto and J. Watanabe, *Cellulose Chem. Technol.*, **24**, 693, (1990).

Main-Chain Motions of a Liquid Crystalline Cellulose Derivatives as Revealed by Dielectric Measurements, Y. Kita, T. Hanai, T. Sato, Y. Tsujii and T. Miyamoto,

*Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 265, (1990).

New Cellulosic Materials Based on the Use of the Chirality, T. Fukuda, *Kagaku To Kogyo*, **43**, 1737, (1990), in Japanese.

Report on IUPAC MACRO 90 (Montreal) with Special Reference to "Symposium on Cellulosics", T. Fukuda, *Sen-i Gakkaishi*, **46**, 540, (1990), in Japanese.

Liquid Crystals of Cellulosics, T. Fukuda, *Sen-i Gakkaishi*, **46**, 504, (1990), in Japanese.

Shrink-Resist Treatments for Wool Using Multifunctional Epoxides, R. Umehara, Y. Shibata, H. Ito, M. Sakamoto and T. Miyamoto, *Text. Res. J.*, **61**, 89, (1991).

Report on Fiber Science and Education '90 Study Tour, K. Tani, T. Miyamoto and T. Uryu, *Sen-i Gakkaishi*, **47**, 275, (1991), in Japanese.

Columnar Liquid Crystals in Oligosaccharide Derivatives I. Discotic Columnar Liquid Crystals in Cellobiose Octadecanoate and Cellobiose Hendecanoate, T. Itoh, A. Takada, T. Fukuda, T. Miyamoto, Y. Yakoh and J. Watanabe, *Liquid Crystals*, **9**, 221, (1991).

Thermotropic Cellulose Derivatives with Flexible Substituents. IV. Columnar Liquid Crystals from Ester-Type Derivatives of Cellulose, T. Yamagishi, T. Fukuda, T. Miyamoto, Y. Yakoh, Y. Takashina, *Liquid Crystals*, **10**, 467, (1991).

Thermotropic Liquid Crystals Based on Oligosaccharides, T. Fukuda, M. Sugiura, A. Takada, T. Itoh, Y.-D. Ma, M. Minoda and T. Miyamoto, *Sen-i Gakkaishi*, **47**, 452, (1991).

Electron Microscopic Observation of Suprastructure Constructed by Inorganic Rod Molecule, Imogolite, N. Donkai, H. Hoshino, K. Kajiwara, T. Miyamoto and H. Inagaki, *Sen-i Gakkaishi*, **47**, 412, (1991).

Penultimate-Unit Effects in Free-Radical Copolymerization, T. Fukuda, Y.-D. Ma, K. Kubo and H. Inagaki, *Macromolecules*, **24**, 370, (1991).

Light Scattering from Ternary Polymer Solutions: An Analysis of the Apparent Radius of Gyration, C. Kappeler, L. Schäfer and T. Fukuda, *Macromolecules*, **24**, 2715, (1991).

Dielectric Relaxation of Liquid Crystalline Cyanoethylated O-(2,3-Dihydroxypropyl)-cellulose, T. Sato, Y. Tsujii, Y. Kita, T. Fukuda and T. Miyamoto, *Macromolecules*, **24**, 4691, (1991).

Development of New Clothing Materials for Sports by Chemical Modification of Natural Fibers, T. Miyamoto, Y. Tsujii, Y. Onogi, C. Mizutani and H. Sakabe, *Descende Sports Sciences*, **12**, 54, (1991).

Oriented Crystallization of Normal Long Chain Compounds on Polyolefins, A. Kawaguchi, T. Okihara and K. Katayama, *J. Cryst. Growth*, **99**, 1028, (1990).

Subcell-matched Epitaxy of Normal Long Chain Compounds on Polyethylene. I. On

the (110) plane, T. Okihara, A. Kawaguchi, M. Ohara and K. Katayama, *J. Crys. Growth*, **106**, 318, (1990).

Subcell-matched Epitaxy of Normal Long Chain Compounds on Polyethylene. II. On the (100) plane, T. Okihara, A. Kawaguchi, M. Ohara and K. Katayama, *J. Crys. Growth*, **106**, 333, (1990).

Formation of Oriented Thin Films of Long Chain Compounds on Polyolefines by Using Epitaxy, A. Kawaguchi, T. Okihara, M. Ohara and K. Katayama, *Kasen Koenshu*, **47**, 1, (1990), in Japanese.

Epitaxy of polymers, A. Kawaguchi, *Hyomen*, **30**, 297, (1991), in Japanese.

Structural Studies on Polymers by Electron Microscopy, K. Katayama, *Nippon Gomu Kyokaishi*, **64**[3], 168, (1991), in Japanese.

High-resolution TEM Studies on Fiber Structure, M. Tsuji and K. Katayama, *Sen-i Gakkaishi*, **46**[11], 388, (1990), in Japanese.

Electron Microscopy of Polymers (TEM, SEM, STEM), M. Tsuji, *Kobunshi*, **40**[7], 478, (1991), in Japanese.

### Biochemistry

Frágment Peptide Library for Classification and Functional Prediction of Proteins, Y. Seto, Y. Ikeuchi and M. Kanehisa, *Proteins: Structure, Function, and Genetics*, **8**, 341–351, (1990).

Human Genome Project, S. Mitaku and M. Kanehisa, *Keisoku to Seigyo*, **30**, 265, (1991), in Japanese.

Knowledge Processing Technologies and Human Genome Project, M. Kanehisa, K. Nitta, A. Konagaya and H. Tanada, *J. Jap. Soc. Artificial Intelligence*, **6**, 630–640, (1991), in Japanese.

Computer Analysis of Nucleic Acid Structures, M. Kanehisa, In “Nucleic Acid Structure and Properties” (Biochem. Soc., ed), Tokyo Kagaku Dojin, 373–388, (1991), in Japanese.

An Expert System for Predicting Protein Localization Sites in Gram-negative Bacteria, K. Nakai and M. Kanehisa, *Proteins: Structure, Function, and Genetics*, **9**, 95–110, (1991).

Analysis of DNA Functional Sites by Information Contents, T. Iijima and M. Kanehisa, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 226, (1991).

Predicting Various Targeting Signals in Amino Acid Sequences, K. Nakai, *Bull. Inst. Chem. Res., Kyoto Univ.*, **69**, 269, (1991).

Secondary Structure of Sphingomyelinase from *Bacillus Cereus*, M. Tomita, K. Nakai, A. Yamada, R. Taguchi and H. Ikezawa, *J. Biochem. (Tokyo)*, **108**, 811–815, (1990).

9-(Dicyanovinyl)Julolidine Binding to Bovine Brain Calmodulin, T. Iio, M. Itakura, S. Takahashi and S. Sawada, *J. Biochem.*, **109**, 499–502, (1991).

Membrane Fusion Induced by Mutual Interaction of the Two Charge-reversed Amphiphilic Peptides at Neutral pH, M. Murata, S. Kagiwada, S. Takahashi and S. Ohnishi, *J. Biol. Chem.*, **266**, 14353–14358, (1991).

Molecular Structure of the Toxic Domain of Heat-stable Enterotoxin Produced by a Pathogenic Strain of *Escherichia Coli*, H. Ozaki, T. Sato, H. Kubota, Y. Hata, Y. Katsube and Y. Shimonishi, *J. Biol. Chem.*, **266**, 5934, (1991).

Three-Dimensional Structure of Cu, Zn-superoxide Dismutase from Spinach at 2.0 Å Resolution, Y. Kitagawa, N. Tanaka, Y. Hata, M. Kusunoki, G. Lee, Y. Katsube, K. Asada, S. Aibara and Y. Morita, *J. Biochem.*, **109**, 477, (1991).

The 2.0 Å Crystal Structure of Cyanide Metmyoglobin Reconstituted with 5,10,15,20-tetrapropylhemine, T. Hata, Y. Hata, T. Sato, N. Tanaka, S. Neya, N. Funasaki and Y. Katsube, *Bull. Chem. Soc., Jpn.*, **64**, 821, (1991).

Enzymatic Conversion of Racemic Methionine to the L-Enantiomer, N. Nakajima, N. Esaki and K. Soda, *J. Chem. Soc. Chem. Commun.*, **13**, 947, (1990).

Recent Topics in Pyridoxal 5'-Phosphate Enzyme Studies, H. Hayashi, H. Wada, T. Yoshimura, N. Esaki and K. Soda, *Annu. Rev. Biochem.*, **59**, 87, (1990).

Thermostable Alanine Dehydrogenase from *Thermophilic Bacillus sphaericus* DSM 462. Purification, Characterization and Mechanism, T. Ohshima, M. Sakane, T. Yamazaki and K. Soda, *Eur. J. Biochem.*, **191**, 715, (1990).

Thermostable S-Alkylcysteine  $\alpha,\beta$ -Lyase from a Thermophile: Purification and Properties, H. Kamitani, N. Esaki, H. Tanaka and K. Soda, *Agric. Biol. Chem.*, **54**, 2069, (1990).

Purification and Characterization of S-Alkylcysteine  $\alpha,\beta$ -Lyase from *Pseudomonas putida*, H. Kamitani, N. Esaki, H. Tanaka, H. Imahara and K. Soda, *J. Nutri. Sci. Vitaminol.*, **36**, 339, (1990).

Substitution of S-( $\beta$ -Aminoethyl)-Cysteine for Active-Site Lysine of Thermostable Aspartate Aminotransferase, T. Yoshimura, Y. Matsuhima, K. Tanizawa, M. Sung, T. Yamauchi, M. Wakayama, N. Esaki and K. Soda, *J. Biochem.*, **108**, 699, (1990).

Biochemistry and Biotechnology of Amino Acid Dehydrogenases, T. Ohshima and K. Soda, "Advances in Biochemical Engineering/Biotechnology" *Manag.*, **42**, 188, (1990).

Continuous Conversion to Optically Pure L-Methionine from D-Enantiomer Contaminated Preparations by an Immobilized Enzyme Membrane Reactor, N. Nakajima, D. Conrad, H. Sumi, K. Suzuki, N. Esaki, C. Wandrey and K. Soda, *J. Fer. Bioeng.*, **70**, 322, (1990).

Synthesis of a New Selenocysteine-containing Peptide and Its Characterization,

T. Oikawa, N. Esaki, H. Tanaka and K. Soda, *Biryo Eiyouso Kenkyuu*, **7**, 97, (1990), in Japanese.

Development of Suicide Substrates with Antimicrobial Activity, K. Soda, *Kagaku Sozai Kenkyuu Kaihatsu Shinkou Zaidan Ken Houkoku* **5**, 35, (1990), in Japanese.

Production of L-Leucine  $\alpha$ -Ketoisocaproic Acid by Cell-Free Extract of *Euglena gracilis* Z, T. Yoshimura, N. Koike, Y. Kimura, R. Yamaoka and K. Hayashiya, *J. Fer. Bioeng.*, **70**, 427, (1990).

Substitution of Glutamine for Lysine at the Pyridoxal Phosphate Binding Site of Bacterial D-Amino Acid Transaminase, S. Futaki, H. Ueno, A.M. del Polo, M.A. Pospischil and J.M. Manning, *J. Biol. chem.*, **265**, 22306, (1990).

Synthesis of A Selenium Analogue of Glutathione and Its Characterization, N. Esaki, T. Oikawa, H. Tanaka and K. Soda, *Biomedical Research on Trace Elements*, **1**, 261, (1990).

A Cofactor of Nitroalkane Oxidase, K. Yokoigawa, J.W. Huh, T. Moriya, K. Tanizawa, N. Esaki and K. Soda, "Enzymes Dependent on Pyridoxal Phosphate and Other Carbonyl Compounds as Cofactors", 491, (1990).

PLP-Dependent and Independent Amino Acid Racemases, K. Soda, "Enzymes Dependent on Pyridoxal Phosphate and Other Carbonyl Compounds as Cofactors", 29, (1990).

Substitution of S-( $\beta$ -aminoethyl)-cysteine for Active-site Lysine of Thermostable Aspartate Aminotransferase, T. Yoshimura, Y. Matsushima, K. Tanizawa, S. Moon-Hee, N. Esaki and K. Soda, "Enzymes Dependent on Pyridoxal Phosphate and Other Carbonyl Compounds as Cofactors", 175, (1990).

Thermostable D-Amino Acid Aminotransferase: Substitution of Arginyl and Alanyl Residues for Lysine, K. Nishimura, K. Tanizawa, T. Yoshimura, N. Esaki, J.M. Manning and K. Soda, "Enzymes Dependent on Pyridoxal Phosphate and Other Carbonyl Compounds as Cofactors", 215, (1990).

Thermostable Alanine Racemase of *Bacillus Stearothermophilus*: Interdependent Folding of Two Domains into an Active Complex, H. Toyama, T. Yoshimura, N. Esaki, K. Tanizawa and K. Soda, "Enzymes Dependent on Pyridoxal Phosphate and Other Carbonyl Compounds as Cofactors", 353, (1990).

Metalloselenonein, the Selenium Analogue of Metallothionein: Synthesis and Characterization of Its Complex with Copper Ions, T. Oikawa, N. Esaki, H. Tanaka and K. Soda, *Proc. Natl. Acad. Sci. USA*, **88**, 3057, (1991).

Effect of Substitution of a Lysyl Residue That Binds Pyridoxal Phosphate in Thermostable D-Amino Acid Aminotransferase by Arginine and Alanine, K. Nishimura, K. Tanizawa, T. Yoshimura, N. Esaki, S. Futaki, J.M. Manning and K. Soda, *Biochemistry*, **30**, 4072, (1991).

Characterization of the Half Overall Reactions Catalyzed by L-Lysine: 2-Oxoglutarate

6-Aminotransferase, T. Yagi, H. Misono, K. Tanizawa, T. Yoshimura and K. Soda, *J. Biochem.*, **109**, 61, (1991).

Acyclic Monoterpene Primary Alcohol: NADP<sup>+</sup> Oxidoreductase of *Rauwolfia serpentina* Cells: The Key Enzyme in Biosynthesis of Monoterpene Alcohols, H. Ikeda, N. Esaki, S. Nakai, K. Hashimoto, S. Uesato, K. Soda and T. Fujita, *J. Biochem.*, **109**, 341, (1991).

Thermostable Phenylalanine Dehydrogenase of *Thermoactinomyces intermedius*: Cloning Expression, and Sequencing of Its Gene, H. Takada, T. Yoshimura, T. Ohshima, N. Esaki and K. Soda, *J. Biochem.*, **109**, 371, (1991).

Thermostable Aspartate Aminotransferase from a Thermophilic *Bacillus* Species, M-H Sung, K. Tanizawa, H. Tanaka, S. Kuramitsu, H. Kagamiyama, K. Hirotsu, A. Okamoto, T. Higuchi and K. Soda, *J. Biol. Chem.*, **266**, 2567, (1991).

Selenium, N. Esaki and K. Soda, *J. of Active Oxygens & Free Radicals*, **2**, 225, (1991).

Overproduction of Glutamate Racemase of *Pediococcus pentosaceus* in *Escherichia coli* Clone Cells and Its Purification, S.Y. Choi, N. Esaki, T. Yoshimura and K. Soda, *Protein Expression and Purification*, **2**, 90, (1991).

Characterization of the *virA* Gene of the Agropine-type Plasmid pRiA4 of *Agrobacterium rhizogenes*, H. Endoh, T. Hirayama, T. Aoyama and A. Oka, *FEBS Lett.*, **271**, 28, (1990).

Binding of the Regulatory Protein VirG to the Phased Signal Sequences Upstream from Virulence Genes on the Hairy-Root-Inducing Plasmid, S. Tamamoto, T. Aoyama, M. Takanami and A. Oka, *J. Mol. Biol.*, **215**, 537, (1990).

The Structure and Function of the Hairy-Root-Inducing Plasmid A4 Virulence Loci, T. Hirayama, *Bull. Inst. Chem. Res., Kyoto Univ.*, **68**, 321, (1991).

Tagging and Cloning of Genes with Transposons, T. Hirayama and A. Oka, *Tanpakushitu Kakusan Kouso*, **35**, 2457, (1990), in Japanese.

The AT Richness and *gid* Transcription Determine the Left Border of the Replication Origin of the *E. coli* Chromosome, T. Asai, M. Takanami and M. Imai, *EMBO J.*, **9**, 4065, (1990).

Isolation of Chicken-bek and a Related Gene; Identification of Structural Variation in the Ligand-binding Domains of the FGF-receptor Family, M. Sato, T. Kitazawa, T. Iwai, J. Seki, N. Sakato, J. Kato and T. Takeya, *Oncogene*, **6**, 1279, (1991).

Ovarian Glycosaminoglycans Potentiate Angiogenic Activity of Epidermal Growth Factor in Mice, E. Sato, T. Tanaka, T. Takeya, H. Miyamoto and S. Koide, *Endocrinology*, **128**, 2402, (1991).

Nucleotide and Deduced Amino Acid Sequences of Chicken Lactate Dehydrogenase-A, Y. Hirota, A. Katsumata and T. Takeya, *Nucleic Acids Research*, **18**, 6432, (1990).

Elevated Expression of Chicken Lactate Dehydrogenase-A Gene in Transformed Cells

and Characterization of Its Promoter Region, Y. Hirota, A. Katsumata and T. Takeya, "Gene Expression", The Second International Mochida Memorial Symposium, 221, (1990).

Growth Stimulation and Gene Expression, M. Sato, M. Kohno and T. Takeya, Control of Cell Growth and Division (eds. by A. Ishihama and H. Yoshikawa) Springer-Verlag, Berlin, 161, (1991).

Activation of Protooncogenes by Promoter Insertion Mechanism, M. Sato and T. Takeya, *Nihon Rinsho*, **48**, 148, (1990).